A new look at the supposed risks of early institutional rearing

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Introduction

The purpose of this review is to consider the longer-term effects of institutional care undertaken in the first 3½ years. The focus throughout is on the identification of mediating mechanisms, capitalising on the fact that the longitudinal studies considered constitute an invaluable natural experiment because a) the children all entered the institutions as babies, thus ruling out the main confounding feature of previous studies of early institutional care ie that the presence of disabilities led to institutional care rather than being caused by it; b) the availability of longitudinal data meant that effects could be examined through within-individual change (rather than having to rely on the less satisfactory option of between-group differences); c) they provided multiple sources of data that facilitated the testing of alternative explanations. We consider only those studies that provided data relevant for the identification of mediating mechanisms. Other studies of institutional care are described in Nelson *et al.* (2014) and McCall *et al.* (2011).

The unifying theme of our review is that institutions are surprisingly diverse in both their characteristics and their effects, and that our purpose needs to be to provide an understanding

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of the mechanisms involved. There should be no presupposition that early institutional care is or is not necessarily damaging to the children who experience it. Existing theories (for example, those focussing on attachment or stimulation – see Rutter & Woodhouse, in press) are unsatisfactory because their focus is misleadingly narrow.

We look, therefore, at the available findings on the heterogeneity of institutions and the effects of changing institutional practices. We begin with longitudinal studies concerned with Romania, Greece and Hong Kong/China that have given rise to strikingly contrasting findings despite the fact that all three studies focussed exclusively on institutional care that began at birth or shortly afterwards, and that all three involved institutional care that ceased by the age of 3½ years. We ask if the risks are dependent on whether or not the institutional rearing is accompanied by gross pervasive deprivation as it was in Romania but was not in either Greece or China. We consider the extent to which the evidence justifies a causal inference in relation to these three studies but with a view to the application to a broader range of studies. We turn to the evidence on considerable heterogeneity in institutional care and ask whether this is systematically related to variations in outcome.

Qualities of institutions

Meta-analysis has been accepted as the best way of quantifying the effects of some intervention or experience (see Kraemer, 2015; Rutter & Pickles, 2016). However, many meta-analyses constitute a heterogeneous mix of randomised controlled trials (RCTs) and observational, cross-sectional and longitudinal studies. This heterogeneity makes meta-analysis problematic (Rutter & Pickles, 2016). On the other hand, a judicious use of the heterogeneity aids the identification of mechanisms when employed in the context of a natural experiment. Because our focus is on mechanisms (rather than quantification of some supposed overall effect), we use prospective longitudinal studies with a randomised control

comparison whenever possible. (We draw attention to the need for special caution when that was not possible).

A key historical publication in 1961 was Goffman's book on asylums in which he focused on all institutions sharing a variety of common features, such as coercion, rigidity and impersonal care that provided an underlying unity, rather than exploring the variations among institutions. Indeed, much early writing about institutional care tended to assume that there were either few variations in important features or that they did not matter very much. Both assumptions were demonstrably wrong. Goffman stated that he would consider the nature of the heterogeneity later but it appears that he never did so.

As early as 1939, Skeels and Dye moved 13 young children from institutional care to be cared for by the residents of a nearby 'home for feeble-minded women'. The children's IQ gained dramatically compared with those who remained in the orphanage and at follow-up, 20 years later, all were self-supporting compared to 1 of the control group (Skeels, 1966). Although this was a small-scale study undertaken a long time ago, its finding is key in that it notes that it was the quality of relationships and increased stimulation that led to good outcomes rather than the training of those who provided it.

It was striking that although there had been many studies of functioning of children in institutions there were very few on the institutions themselves (Dinnage & Pringle, 1967). The detailed Stevens' (1971) study of the Metera Babies Centre, used in the later Greek study by Vorria *et al.* (see below), should have paved the way. The book edited by Tizard, Sinclair and Clarke (1975), while not mentioning the Stevens' study, did, however, provide many examples of research that sought to measure institutional qualities and which related those variations to differences in the effects on children. Jack Tizard and his colleagues showed that organisational and management features were as important as staff ratios or the size of

the residential units and emphasised the importance of "child-oriented" rather than "task-oriented" practices. This shifted the priority from the smooth administrative running of the institution to a focus on the individual care of the children according to their age and needs.

Improvement of quality of institutional care – changing institutional practices

Eritrea

Wolff *et al*. (1995) and Wolff and Fesseha (1998) studied institutions in Eritrea. The findings showed that when conditions for children in an Eritrean orphanage received a major social reorganisation, focusing on a nurturing child-oriented approach, this resulted in major emotional benefits for the children (see on-line appendix (a) for details).

St Petersburg-USA Orphanage Research team (2008)

The most systematic modern study of how improvements in the quality of institutional care can bring benefits to the children is that undertaken by the St Petersburg-USA Orphanage Research team (2008) in which three institutions, caring for children up to the age of 4 years, were compared. Interventions were put in place in two St Petersburg Baby Homes; in one, the regular staff received training in individualised socioemotional interactions supported by structural changes (such as smaller group sizes) to provide a more family-like context in which to complement the training, and in the other, the institutional staff received only training and no structural changes. The control group continued with "business as usual" under the management of a Director who took pride in having a well-run institution with good conditions and top quality nursing and who considered that change might disrupt such functioning.

Although this was not an RCT there were strong reasons for concluding that the quasi-experimental approach adopted was, in fact, the design of choice (see Rutter, 2008). Detailed

findings showed that the institution where there was both structural change and training was accompanied by measureable alterations in staff behaviour with consequent benefits for the children's development. Moreover, these benefits were still evident from a follow-up some six years later providing indirect support for the original group differences (McCall et al. 2013). The follow-up was limited in that it could only be undertaken with children who were adopted into US families through one adoption agency and to Russian families. Also, because of the lack of funding, there were no data relating to children departing from the institutions during the two-year interval after the study ended. It was possible that beneficial societal changes accounted for the persistence of benefits but what these overall trends could not account for was that the differences between the three Baby Homes were maintained over time. The researchers highlight that the sustainability of the continuing benefits came from the design and maintenance of the interventions through the commitment of the Directors, cost-effectiveness of a train-the-trainer strategy and the changed behaviour of all regular staff throughout the institution. The St Petersburg study showed that the nature of institutional care not only varied but also mattered in terms of outcomes for the children.

Romanian studies

The English and Romanian Adoptees study (ERA) investigated the long-term effects of early institutional care that involved profound deprivation in a total sample of children who were adopted into the UK by the age of 3½ years (Rutter & Sonuga-Barke, 2010). 98 adoptees were followed-up at 6, 11, 15 and 22-25 years of age after 6 to 43 months in Romanian institutions. The findings were compared with a group of Romanian adoptees that had not experienced institutional deprivation or had experienced it for a period that did not extend beyond the age of 6 months, plus a group of children adopted within the UK who had not experienced institutional care. A rigorous set of methodological steps was taken to check whether the pooling of these three groups provided a valid composite group. The same

measures were used in both the institutional and pooled composite comparison group. What was particularly striking in the findings of this study was that, although the expectation had been that the institutional rearing would lead to an increase in the rate of common emotional and behavioural problems that is not actually what was found. Instead, there was the development of features such as social disinhibition and quasi-autism. These are the two most striking features of behaviour that appear to be deprivation specific. Moreover, they are often associated with each other.

Disinhibition is not necessarily pathogenic and Lawler and colleagues (2014) sought to differentiate normal from atypical behaviour in relation to disinhibited social engagement. A volunteer sample was studied (with all the problems that that brings) but this should not invalidate this internal comparison which involved behavioural observations. What they found is that disinhibited attachment is more likely to be abnormal when accompanied by unusually high physical contact (ie intimacy). This is rare among non-adopted controls who, whilst sociable, do not display such high levels of intimacy. Comparable studies on quasi-autism are needed but have not yet been undertaken.

The ERA study involved no planned intervention as part of the design, but the Bucharest study did (Nelson *et al*. 2014). Indeed, it constituted the first-ever RCT of foster care versus institutional care (Nelson *et al*. 2007). Of the original 187 children, 51 were excluded because they had a genetic syndrome, microcephaly, or obvious signs of fetal alcohol syndrome. Of the remaining 136, the Humphreys *et al.* (2015) study compared some 55 children placed in foster care with a similar number of children remaining in institutions (see Humphreys *et al.* 2015, figure 1, p.627). Using an "intent to treat" analysis, substantial benefits were found for cognition and language. For good ethical reasons it was decided that children kept in the institution in the "care as usual" condition should still be included even if they moved out of institutional care. The "intent to treat" analysis (meaning one that was

strictly based on the initial randomisation) was appropriately used for the first comparison because that was the only satisfactory way to avoid selection bias (see Kraemer, 2015). But a resulting constraint is that the analysis cannot determine the effects of treatments actually received. Accordingly, it was necessary to move away from an "intent to treat" analysis in order to examine the possible effects of changes in foster care placement. This was done and it was found that there were substantial and important differences in outcome according to whether or not foster care was stable or disruptive, with the disrupted group having a worse outcome. The one exception to that were ADHD symptoms which, in keeping with other evidence, were less affected by foster care.

Adoptees from Romania were also studied in Canada by Audit & Le Mare (2010). We do not discuss this study in detail because the initial sample was selected from volunteers, and because there was substantial attrition. It warrants brief mention, however, because it claimed, on the basis of a significant statistical interaction, that variations in the qualities of the adoptive home had an influence on outcome, with benefits for those who had experienced more than 19 months of institutional deprivation but with an opposite effect in those less deprived. This was not found in other Romanian studies.

Greek studies

Vorria *et al*'s (2003) study compared 52 adopted adolescents aged 13 years who experienced early institutional care at the Metera Babies Centre in Athens with 36 adolescents of the same age who were raised in their biological families and attended day care. Metera involved a lack of individualised personal care but did not involve either gross general deprivation or subnutrition. The study provided a detailed report of the institutional practices in Metera including data on the children and also follow-up after adoption at 4 and 13 years of age, thereby providing longitudinal change within individuals as well as comparisons between

groups (Vorria *et al.* 2014, 2015a, 2015b; Vorria *et al*. 2015). In Metera, the babies were initially housed in separate small rooms where social interactions were highly restricted. At about five months the infants were moved to a different part of the institution where the quality of care improved as each caregiver was expected to forge a special relationship with at least one infant. It may be that this provided an important protective factor.

There was marked heterogeneity in outcomes but no significant difference between those who experienced early institutional rearing and those raised by their biological families in overall outcome. However, the outcomes differed greatly if care continued beyond the age of 2 years (in line with the Bucharest study – Nelson *et al*. 2014).

It is interesting that another sample of babies from the Greek Metera Centre was followed-up after thirty years by a study in 2010 by Storsbergen and colleagues. The 53 adults had been adopted by Dutch couples before 1970 as babies at a mean age of nine months and were followed-up at the age of 25 to 36 years. While predominantly exploring the psychological adjustment of a non-clinical group of adopted adults in relation to their appraisal of adoption itself (rather than the early care provided in the orphanage) and whether or not they searched for their birthparents, the findings similarly showed largely positive outcomes in adult life with respect to mental health, well-being and self-esteem. They found few differences between internationally adopted adults and their Dutch born, non-adopted counterparts. Their findings, however, were limited by the non-random method of recruitment, the exclusive use of self-report questionnaires, and a modest sample size of 53.

The Vorria *et al.* (2003) study gave a less favourable picture of the childcare in Metera and found that a third showed a secure attachment, although disorganised attachment was over-represented.

Chinese studies

In 2004, the British Association for Adoption and Fostering (BAAF) was given access to the records of 100 Chinese girls, now adults, who had been adopted (from between 8 months to 6 years old) in the United Kingdom in the 1960s (Feast *et al*. 2013; Rushton *et al*. 2013). They had spent their early years (an average duration of 20 months) in Hong Kong orphanages and the long-term implications of this institutional care were followed-up at a mean age of 48 years via a qualitative study involving a self-completion questionnaire pack and, in most cases, a subsequent in-depth extensive interview with the adults of 1½ to 4 hours. The subjects were compared with both adopted and non-adopted individuals from the 1958 British cohort of the National Child Development Study and, in conclusion, no significant differences were found between the three groups. The findings showed that 82% of the women from the Hong Kong institutions had married, mostly with white Europeans and 71% had either a biological or adopted child. More than a third obtained a university degree as compared with 11% of the total comparison cohort. 85% were in good health and 97% had one or more close friendships. 75% were employed of which a third were working either in nursing or in the social care field. About 15% showed relatively poor functioning with more frequent contact with mental health services and more problems with relationships and severe social difficulties. But there were no differences with respect to seeking help for psychological problems between the Chinese adoptees and the comparison group. Indeed, the great majority of the women showed superior to good functioning.

The Hong Kong orphanages from which these women had been adopted had relatively good material conditions; they were clean, provided regular medical care, and efforts were made to provide stimulation for psychological development. The diet was restricted but fairly adequate, although children were sometimes left to feed themselves from bottles. The staff-child ratio varied from between 1:8 to 1:22 depending on the size of the institution which could range from 65 to 450 children. The rotation of staff meant that the children had

multiple caregivers, thereby implying discontinuous relationships and a lack of personalised care. It should be noted that the early experience data were gathered retrospectively (but the availability of contemporaneous records made this reasonable) whereas for the Greek and Romanian study it was gathered as part of the study.

Whilst this study focuses on the impact of the early years spent in an institution, this group also went on to be adopted transnationally and while for some this was a challenging or negative experience, for others the predominantly British middle-class adopters may have offered an enriching and, therefore, protective factor.

When considering the effects of institutional care not involving global deprivation, adoptions from China provide a useful group to consider. For the most part, they were abandoned largely because of China's one-child policy rather than abuse or neglect from the biological parents (Cohen & Farnia, 2011). This research has the considerable strengths of a prospective study that also involved a comparison group of non-adopted Canadian girls. In addition, high quality measures were employed. On the other hand, the children earmarked for international adoption in China were selected by the Chinese because of the perception that they were healthy and therefore suitable for intercountry adoption (thereby introducing selection bias).

The other key study of Chinese adoptees is the one undertaken by Tan and his colleagues (Tan 2006, 2009; Tan & Marfo, 2006). The sample differed from Cohen and Farnia's in being involved with adoption in the USA rather than in Canada. Like Cohen and Farnia, they had no systematic information about the institutional conditions. They had to use a volunteer sample and the orphanages would not usually allow visits from researchers (or parents). They particularly focused on comparisons according to a history of early neglect (not quantified or specified) experienced in the first two years of life in the institution prior to

adoption. The findings showed that the history of neglect was associated with poorer academic performance as well as less good social functioning. Overall, however, the outcomes were relatively good when compared with non-adopted children.

Testing causal inferences

Romanian studies

A key issue in the studies of the effects of the institutional rearing on outcome concerns the need to use the "natural experimental" features to test a causal inference. This was done most thoroughly in the English and Romanian Adoptees study (Kumsta *et a*l. 2010; Kumsta *et al.* 2015). Most previous studies of institutional effects suffered from the major methodological problem that the children were admitted to institutional care at a variety of ages, raising the possibility that sequelae were actually caused by disabilities that led to admission to the institution, rather than anything to do with the institutional experience itself. It did not apply here because all the children were admitted either at birth or in the early weeks of life.

The causal inference needs to be considered in relation to two rather different questions. First, there was a question of the catch-up that followed leaving the institutional care, and second, there was the causation of the persisting deficits in a minority of the children. Because the children underwent developmental assessments at the time of leaving the institution, within-individual change could be examined. The huge improvement in functioning following leaving the institution meant that it was reasonable to assume that the initial deficit had been a function of the effects of institutional care. The causal effects on the persisting deficits had to be tackled in a slightly different fashion, focusing on the plausibility of alternative explanations. These included assessment of the nature of the persisting deficits which were shown to be highly unusual with respect to the inclusion of autistic-like patterns and disinhibited attachment. In addition, it was necessary to consider the alternative that the

deficits were a function of either variation in the adoptive home environment (which was shown not to be the case) or the presence of indicators of possible non-institutional causal influences, such as observational evidence of fetal alcohol syndrome. As explained in the Kumsta *et al*. papers, causation had to be considered in relation to the plausibility of alternative explanations. On this basis it is clear that the causal inference was soundly based.

Greek studies

Somewhat comparable issues were examined in relation to the Greek adoptees study (Vorria *et al*. 2014, 2015a, 2015b; Vorria *et al*. 2015). This study had the advantage over the Romanian study of contemporaneous assessment of the children while they were in the institution, well before adoption took place. As with the Romanian study, the evidence was in favour of within-individual change of a substantial degree. The existence of a day care comparison group, followed in the same way, meant that it was possible to examine the extent to which there were persisting deficits. Causal inference was examined by determining whether the outcomes were a function of institutional care or other features, such as qualities of the adoptive home. The evidence of the predominant effect of institutional features is the most important in showing validity of the causal inference.

An earlier study by Vorria *et al.* (1998a, 1998b) showed that admission to orphanages in Greece was largely because of poverty (mainly in rural areas), rather than abuse or neglect. These earlier findings showed that the outcome was best for children who had experienced stable, harmonious family relationships in their early years prior to admission to the orphanage.

Chinese studies

The Chinese study provided fewer opportunities for testing the causal inference. To begin with, the examination of within-individual change over time was not possible because no contemporaneous measures were available for the pre-adoption period. As already noted, the outcome at a mean age of 52 years was outstandingly good. None of the variables reflecting orphanage care significantly predicted adult outcome but, by contrast, the outcome was significantly worse for those who recalled their adoptive parenting as stressful. This is an unusual finding but there must be caution because of a very possible confound in recollections going back many decades being reported by the same person who reported adult outcome. Nevertheless, if that is put aside, it remains the case that there is no satisfactory way of testing the causal inference regarding early experiences of institutional rearing in relation to adult outcome.

Sensitive periods

A key feature of the findings on early institutional care in the Romanian study is that there appears to be a sensitive period by which effects were not evident if the institutional rearing did not extend beyond the age of six months but it did produce marked effects thereafter (Rutter *et al*. 2010). The concept of sensitive periods requires that there is both a beginning and end to the age period. The term sensitive period is a broad term that applies whenever the effects of experience are unusually strong during a limited period in development (Knudsen, 2004). Although such periods are reflected in behaviour, they are actually a property of neural circuits. Accordingly, their occurrence in relation to early institutional care constitutes an important pointer to the biology underlying the effects of institutional care (see also Heim & Binder, 2012). Whilst study of the biology of institutional effects is outside the remit of this paper, it is vital to acknowledge its importance in the operation of sensitive periods. Very little satisfactory evidence is available with respect to the end of such periods although the findings comparing early institutional care with that beginning only when the

children are older are relevant. It has been suggested that there is no further increase in deficits after the first few years but this conclusion is methodologically uncertain (McCall *et al*. 2013). Merz and McCall (2010) suggested that a sensitive period may vary according to the degree of deprivation in the institution, but numerous methodological considerations mean that this tentative suggestion is, indeed, tentative. The main problem is that the death rate in some institutions was very high and therefore what was being studied were the findings in relation only to survivors.

Institutions outside of Romania where there was major deprivation

There are multiple studies of institutions where abuse and neglect were common. For example, Perry and colleagues studied orphans in Quebec institutions initially staffed by nuns. Abuse was reported by almost everyone but the institution differed from those in Romania in that it did not have the high prevalence of neglect and subnutrition. Although some four-fifths of the children had entered institutions at, or near, the time of birth, the researchers did not separate out that group from those admitted later. There was not a very satisfactory control group and the sample of institution-reared individuals was not representative (Perry *et al*. 2005; Sigal *et al.* 2003).

Hermenau and colleagues (2014) compared early and late institutionalised children in Tanzania. The results showed that severe corporal punishment and neglect and abuse were quite common within the institution, with adverse childhood experiences more common in those admitted early as compared with those admitted later.

There are studies of institutions outside Romania where there was general deprivation in relation to neglect and abuse but unfortunately they did not use measures that enable us to determine whether deprivation specific patterns, of the kind identified in the Romanian study, applied there.

Institutions without global deprivation

Tizard and Hodges (1978) described the development of a group of 65 children whose first years had been spent in residential nurseries, having been admitted before the age of 4 months and continuously remained there until the age of 2. Between the ages of 2 and 4 years, 24 of the children had been adopted, 15 restored to their natural parents while 26 remained in institutional care. The institutions studied were not globally depriving but close personal relationships between adults and children were discouraged and care of the children had passed through 24 different caregivers in the first 2 years and some 50 different caregivers by the age of 4½ years. When the children were aged 2 years and 4½ years their development was compared with a group of 30 London home-reared, working class children. The main comparisons were between all adopted children, all restored children, all children who had been continuously in institutions since infancy and the London comparison group. The great majority of the adoptive mothers (84%) and London mothers (90%) reported that their child was closely attached to them but this was true of only about half of the restored children and the institutional children. This is a very important study because it formed the basis of the planning of many of the later studies. However, the sample size was small and the measures of attachment were rather unsophisticated by modern standards.

There are also reports of institutional rearing in Portugal in institutions with demonstrated sensitive caregiving (Oliveira *et al*. 2015; Soares *et al*. 2014). Children were admitted at a mean age of 7 months but the sample included children up to the age of 24 months and there were only two children admitted before 6 months. Accordingly, the reports are of little relevance in relation to the effects of early institutional care.

Direct comparisons of institutional care and community care

The Positive Outcomes for Orphans (POFO) study undertaken by Whetten *et al.* (2009) provides the best evidence on direct comparisons between 1357 institution-dwelling orphaned and separated children and 1480 community-dwelling children from five low and middle income countries. However, uncertainties arise from differences across published papers on the ways in which the community care group is described. The first paper in 2009 referred to a community living sample made up of either double orphans or children abandoned by both biological parents. This was planned from the outset as a longitudinal study and the Whetten *et al*. 2014 paper provided the results at the 36 month follow-up. The findings are sufficient to reject the notion that institutional care is always worse than community care but the extensive heterogeneity means that the actual experiences are more important than the structure of the care (see also Gray *et al,* 2015; and on-line appendix (b) for further details).

Services in Japan

Japan is very unusual in having a system in which institutional care has been seen in the past as a preferable option to foster family care. This arose initially due to the extensive numbers of abandoned children who had lost their parents and family to intensive aerial bombing in major cities during World War II (Harada, 2011). At first, there had been concern because of reports of abuse in some institutions. Moreover, most parents were more willing to accept placements in institutions rather than placement in foster families because they feared that their children would get close to the foster parents and lose affection for their biological parents. Under some pressure from international organisations, Japan has been moving away from the traditional pattern of having institutional care as the preferred option. In 2007 a report recommended the adoption of measures to improve the foster care system particularly for children who had been abused or neglected. It advocated the need to provide individualised care but the report did not recommend that foster families be considered as a first placement option. Rather, family-like care was to be achieved not only by foster

families or foster homes, but also by downsizing the care units in its Child Welfare Institutions and a commitment to establishing new institutions (Harada, 2011; Zhang *et al*. 2016).

Accordingly, at first sight, it seemed that Japanese services provided a golden opportunity to consider whether institutional care was damaging as it was usually thought to be. However, there are several reasons why it has not proved as useful as hoped (see on-line appendix (c) for further details).

Conclusions

The Greek, Chinese and Romanian studies were all longitudinal, dealing with the major problems of institutions, namely social selection being an artefact. What these three studies indicated was that the overall outcome for the Romanian adoptees, where the care was profoundly depriving, was often bad, whereas in the Chinese study, the outcome was actually extremely good. The Greek study had the advantage of examining children pre-adoption but a limitation is that the follow-up only extends to age 13 which is too young for any definitive assessment of long-term outcome.

Possible methodological differences accounting for heterogeneity in outcome among the three studies rather than institutional rearing per se.

1. The possibility of gender differences was looked at systematically in the Romanian study and none was found. It was also examined in the Greek study where there are a few inconsistent but mostly non-significant differences. The best outcome was clearly in the Chinese study and that is also different from all the other studies in being entirely a sample of girls. Altogether, however, it seems unlikely that the findings can be accounted for in terms of gender differences.

2. Variation in quality of the adoptive home. This was unrelated to outcome in both the Romanian study and the Greek study. In the Chinese study there was an apparently significant effect of the quality of the adoptive home but the data were retrospective and of dubious validity. It seemed unlikely that this can account for the differences among the studies but because the same measures are not available in all three samples, it is not possible to be absolutely sure.

3. The experiences before adoption. In all three studies, most children entered institutional care because the family was experiencing gross poverty (mainly in rural areas) and abuse or neglect were both uncommon, so far as could be judged. Mental disorder in the parents was not a common cause for admission and was not a predictor within the Greek sample. In the Romanian study there were systematic attempts to consider the possibility of fetal alcohol effects and a handful of children were excluded where that possibility arose.

4. Duration of orphanage care. In both the Greek and Romanian study almost all of the children were admitted at birth or in the early weeks of life. The Chinese study was a little bit different in that the mean age of entry to the orphanage was three months of age and there were 17 out of 72 children who entered when over the age of six months (Rushton *et al*. 2013). We have had to rely on age at adoption as an index of age of leaving institutional care. Hawk *et al*. (2012), using data from the St Petersburg study, showed that there was a close agreement between the two. The later adoptees were likely to have spent time in the family prior to going into the orphanage and they had the experience of abuse and neglect rather more than the earlier adoptees had. In contrast, Vorria *et al*. (1998a, 1998b), studying orphanages in Greece, found that those adopted later were more likely to have had beneficial experiences in the biological family. It would be unwise to assume any non-varying association but the findings are a reminder that when considering the effects of early

institutional care, attention needs to be paid to both prenatal and postnatal experiences in the biological family.

Unfortunately, the Rushton report on the Chinese study did not report analyses on the effect on outcome of the age of entry to the orphanage. Nevertheless, it seems most unlikely that the small minority of the group who entered late could account for the good outcome.

The major difference between the Romanian study and the other two studies was the pervasiveness of global deprivation. Institutional conditions were examined in both the other studies and were found to be generally reasonable apart from lack of individualised care. It is also striking that it is only in the Romanian study that social disinhibition and quasi-autism were evident. The implication is that it is the global deprivation that creates the risk of both of those unusual patterns but there has been a paucity of research examining non-institutional samples in order to determine whether or not that is the case. Also, in the few studies that sought to examine these specific patterns in children reared by their families, there was a paucity of measures that could possibly pick them up.

There have also been attempts to try to see intercountry adoption as a key unifying variable and we think the evidence does not support that. Also, many reviewers have wished to view everything through the lens of an attachment perspective. Attachment theory and findings have undoubtedly had a lot to contribute but they are by no means all. The evidence suggests that physical and sexual abuse may be more important risk factors.

In seeking to pull the conceptual conclusions together, we need to express concern regarding attempts to put effects altogether in one overall package. Thus, much of the literature seeks to conclude that early institutional rearing is inevitably damaging. The evidence does not support that. Rather, it suggests that it is a risk factor but the most profound effects are seen only when the rearing is accompanied by gross deprivation, as it was in the Romanian

sample. The main unresolved issues concern the consequences of early institutional rearing when there is not pervasive gross deprivation (McCall, 2013; McCall *et al*. 2011). These key points need to be made. First, as shown in numerous studies from Stevens (1971) onwards, the styles of rearing in even the best institutions differ from those usually provided by families. Second, institutional rearing can be improved (as well shown by the St Petersburg study) with demonstrable benefits for the children. Third, institutional rearing is likely to impinge on individual children in different ways. The challenge is to harness the findings to policy development.

Declaration of interest

None

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